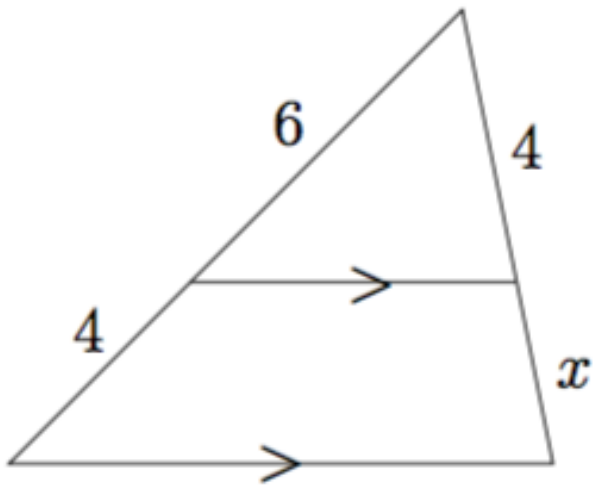
**Topic**: Triangle side-splitting theorem

**Question**: Solve for the variable.




**Answer choices**:

A $2$

B $2\frac{2}{3}$

C $3$

D $3\frac{1}{2}$

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**Solution**: B

The ratio $6/4$ has to be equal to $4/x$.

$$\frac{6}{4} = \frac{4}{x}$$

$$6x = 16$$

$$x = \frac{16}{6} = \frac{8}{3} = 2\frac{2}{3}$$

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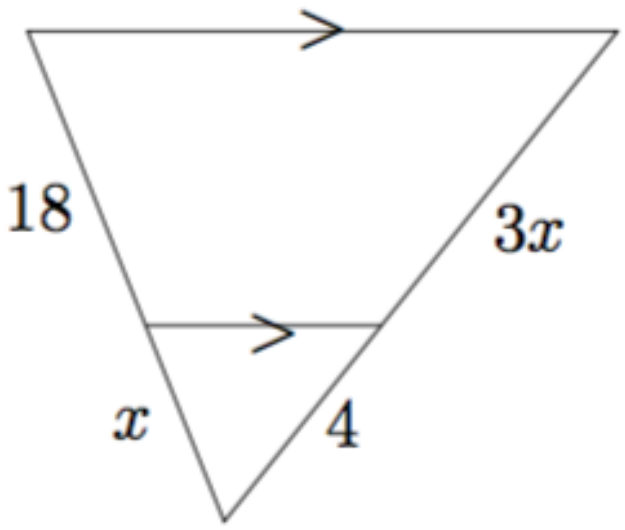


**Answer choices:**

A $6\sqrt{2}$

B $4\frac{1}{2}$

C $6$

D $2\sqrt{6}$

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**Solution**: D

The ratio $x/18$ has to be equal to $4/3x$.

$$\frac{x}{18} = \frac{4}{3x}$$

$$3x^2 = 72$$

$$x^2 = \frac{72}{3} = 24$$

$$x = \sqrt{24} = \sqrt{4} \cdot \sqrt{6} = 2\sqrt{6}$$

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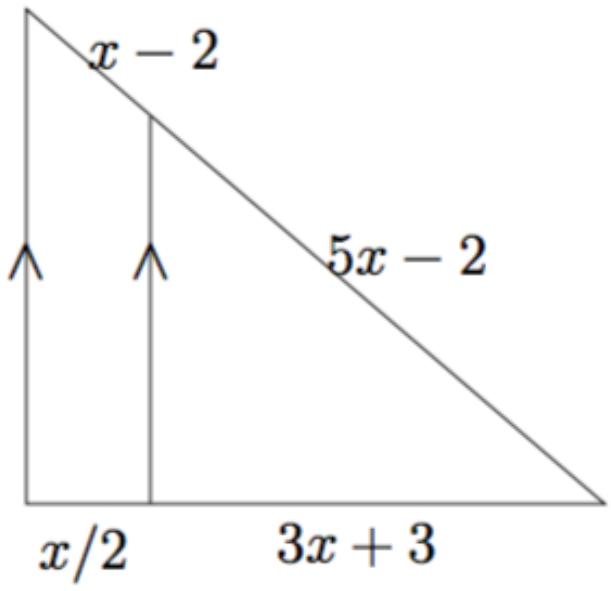


**Answer choices**:

A 6

B 7

C 4

D 5

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**Solution**: A

The ratio $(x-2)/(x-2)$ has to be equal to $(x/2)/(3x+3)$.

$$\frac{x-2}{5x-2} = \frac{x/2}{3x+3}$$

$$\frac{5}{2}x^2 - x = 3x^2 - 3x - 6$$

$$5x^2 - 2x = 6x^2 - 6x - 12$$

Collect like terms and factor.

$$x^2 - 4x - 12 = 0$$

$$(x-6)(x+2) = 0$$

$x = 6$ or $x = -2$

Rule out $x = -2$ because that will give a negative value for the sides.

Therefore, $x = 6$.

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